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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/826,472	04/04/2001	Bin Yu	P1296	6214

7590 01/28/2003

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EXAMINER

POMPEY, RON EVERETT

ART UNIT	PAPER NUMBER
2812	

DATE MAILED: 01/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/826,472

Applicant(s)

YU, BIN

Examiner

Ron E Pompey

Art Unit

2812

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

1) Responsive to communication(s) filed on 14 November 2002.

2a) This action is **FINAL**.                    2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

4) Claim(s) 1-19 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 1-19 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on \_\_\_\_\_ is: a) approved b) disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some \* c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_

4) Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_

5) Notice of Informal Patent Application (PTO-152)

6) Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gardner et al. (US 5,963,810) and further in view of Dautartas et al. (US 6,124,158).

Gardner discloses the limitations of:

For 1, 2, 4-6, 8, 9, 11, 12 and 14:

depositing a first nitride film (303, fig. 3A) on a semiconductor substrate;

depositing a high-k material (305, fig. 3B) on the first nitride (col. 5, Ins. 30-64 and col. 3, Ins. 25-32),

depositing a second nitride film on the high-k material (col. 6, Ins. 13-20); and completing fabrication of the device (col. 6, Ins. 1-12).

3. Gardner discloses the claimed invention except:

For where Dautartas discloses:

For claims 3, 7, 13 and 15-17:

wherein the nitride films are deposited by using an atomic layer deposition (ALD) technique (col. 7, Ins. 15-30).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to form the nitride layers using an ALD technique, because this

deposition technique provides excellent uniformity and surface conformity of thin insulator films.

4. For claims 10 and 18 -19 the examiner takes *official notice* that it is well known to form a gate from a group of materials consisting essentially of polysilicon and polysilicon-germanium, and that using a photoresist is part of known etching processes.

***Response to Arguments***

5. Applicant's arguments filed 11-14-02, pertaining to claims 1-19, have been fully considered but they are not persuasive.

6. Applicant argues that Gardner doesn't disclose the presently claimed thin metal film containing a patentably distinct **group of species** in combination with depositing silicon nitride layers by the patentably distinct **ALD** technique. However, the patentably distinct group of species as disclosed includes wherein the thin metal comprises a metal oxide and Gardner discloses tantalum oxide, for example, which is an oxide of one of the materials in selected metals group, therefore Gardner does not read on that part of the claimed invention. The applicant states that Gardner does not disclose depositing the nitride layers by an ALD technique. However, the applicant does not argue that Dautartas does form nitride layers by ALD technique or that the reasons for combining Gardner and Dautartas, stated above is not adequate. However, the applicant does argue that 103(a) is improper under 103(c), but this is incorrect due to the fact that the Gardner reference would be considered a 102(b) not 102(e) pertaining to this case and

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103(c) only disqualifies prior art that would be considered as a 102 (e, f or g) and commonly owned or assigned, therefore the 103(a) rejection is proper and is upheld.

***Conclusion***

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

***Drawings***

8. The corrected or substitute drawings were received on 11-14-02. These drawings are accepted.

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Art Unit: 2812  
January 24, 2003

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